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PUERTO RICAN AGRICULTURE A CENTURY AGO

Unlike some of the other Spanish colonies Puerto Rico has had no prosperous or glamorous periods to record. Quite to the contrary, the outstanding events are, in the main, those that brought still more trials and sorrows to an already unhappy folk. Indian insurrections, pestilences, earthquakes, hurricanes, and the attacks of merciless pirates and gold-hungry buccaneers which brought desolation and poverty thwarted orderly cultural and economic advance. Added to these numerous perils were the short-sighted and even vicious restrictions originating in far-off Spain and administered not uncommonly by corrupt and unscrupulous officials without thought of improving local conditions. Given such circumstances, little progress could be expected from any people.

Changes for the better came with the opening of the nineteenth century, largely through outside influences. Napoleon's occupation of the Iberian Peninsula in 1808 and the political turmoil that followed loosened the grip of Spain on its colonies, and between 1810 and 1824 the world's largest colonial empire slipped from its grasp. The English colonies along the North Atlantic Coast, now grown into vigorous nationhood, began to make their influence felt in the Caribbean region. Perhaps from a sense of self-preservation, Spain permitted periods of easement and political liberality. For these times of surcease, the colonials naturally rejoiced, but their joy was usually short-lived. The desire for self-enrichment was too deeply ingrained in the selfish officials for them to overlook the possibilities of exploitation.

In spite of the many handicaps, it still seems strange that three centuries could pass with so little progress, for the resources of Puerto Rico were abundant and the natural conditions most favorable. In comparisons with the homeland, and especially its barren plateaus, the island was always spoken of as highly productive, the soil as unusually rich, and the lush tropical veg-

etation as a never-ending wonder. The frequent comparisons with the Lesser West Indies always favored Puerto Rico. It was man-made conditions that brought the blight on the island's potentialities.

With all of this latent richness, there was never enough money for governmental expenses. Even with burdensome taxes and the allotment of the *Situados Mejicanos*, a large assessment made on Mexico from 1586 to its revolt in 1810, the island had no money for improvements. The annual allotment was used to build a fort at San Juan and to support its garrison, to pay civilian employees, and for various other purposes. As an outpost of a vast colonial empire, Puerto Rico bore the brunt of attacks by pirates and freebooters with the sanction and encouragement of Spain's enemies. Besides, there was little taxable wealth, and if any appeared it was soon taxed out of existence. To avoid confiscation of property through taxation, the records were so falsified that they afford little evidence on actual transactions. Moreover, little of the money collected ever reached the treasury as fraud and speculation prevailed without shame or disguise.¹

¹ This article is based on a fairly wide survey of the literature relating to Puerto Rico during the late 1820's and early 1830's. George D. Flinter, *An Account of the Present State of the Island of Puerto Rico* (London, 1834) is invaluable. The author, a military man with twenty-one years of service in the West Indies, made use of "numerous original facts and documents illustrative of the state of commerce and agriculture, and of the condition, moral and physical, of the various classes of the population in that island, as compared with the colonies of other European powers; demonstrating the superiority of the Spanish slave code,—the great advantages of free over slave labour, &c.," with the avowed purpose of making known "the great and growing importance of the colonies that remain to Spain . . . , and especially of the valuable and fertile island of Puerto Rico."

R. A. Van Middeldyk, *The History of Puerto Rico from the Spanish Discovery to the American Occupation* (New York, 1903), another valuable book in English, emphasizes the forces that have been at work and has an excellent bibliography. In Spanish the writings of Salvador Brau are among the best, especially his *Historia de Puerto Rico* (New York, 1904). For another point of view, see Tomás-Blanco, *Prontuario Histórico de Puerto Rico* (1935). Fray Inigo Abbad y Lasierra, *Historia Geográfica, Civil y Natural de la Isla de San Juan Bautista de Puerto-Rico* (Puerto Rico, 1866), and Pedro Tomás Córdova, *Memoria Sobre Todos los Ramos de la Administración de la Isla de Puerto Rico* (Madrid, 1838), are especially good for the period under consideration. A most readable book on present-day Puerto

Such, in general, were the conditions in Puerto Rico at the close of the first three centuries of Spanish rule. Economic activity was at a low ebb; mining had long since ceased, agriculture as we know it was scarcely worthy of the name, and manufacturing had not even begun. "It can scarcely be said that, till within these last twenty years [preceding 1834], the fertile fields of Puerto Rico had felt the vivifying hand of cultivation."² In the midst of seeming plenty, the people, numbering perhaps 350,000, had little but misery and dire poverty.³ They were ambitionless and despondent, and their future seemed hopeless.

In the early years of the nineteenth century, Puerto Rico experienced what promised to be the beginning of a new era. Tax collections were placed under a separate head in 1811, and soon the machinations of the old system became known. Under the direction of Alejandro Ramírez, more money, even without the Mexican assessment, was available in the treasury than ever before. However, the real change came in 1815 with the royal decree of Ferdinand VII, the *Cédula de Gracias*. Although many of its provisions are now mere commonplaces, it was an amazing document for that day. Among the many benefits established were freedom of trade with foreign countries, free importation of agricultural machinery, and admission of immigrants from friendly powers provided they were Catholics. Such immigrants might become Spanish citizens, and they might leave with some of their accumulated property after five years of residence. Lands were to be granted to these immigrants gratis, the quantity being gauged by the number of slaves, in order to insure cultivation of the land. These immigrants were also to be exempt from

Rico is R. J. Van Deusen, and E. K. Van Deusen, *Porto Rico, A Caribbean Isle* (New York, 1931). Victor S. Clark, and associates, *Porto Rico and Its Problems* (Washington, D. C., 1930), is a thorough and impartial study. Bailey W. Diffie and Justine Whitfield Diffie, *Porto Rico, A Broken Pledge* (New York, 1931) attempts to prove that the United States has failed in the Island.

² Flinter, *An Account of the Present State . . . of Puerto Rico*, 2.

³ According to F. I. Abbad y Lasierra, *Historia Geográfica, Civil y Natural de la Isla de San Juan Bautista de Puerto-Rico*, 301 (Puerto Rico, 1866), there were 188,869 whites, 101,275 mulattoes, 25,124 free Negroes, 41,818 Negro slaves, and 1,750 troops and prisoners, a total of 358,836 people, in 1834.

taxes and export duties on their products for the first years. They were also released from paying tithes on their incomes for fifteen years. In case of war, they could leave the island if they wished. As the news of this opportunity spread, many of the best and wealthiest citizens of the Spanish possessions and even seventy-five "gentlemen" from Louisiana migrated to this new liberal haven, bringing with them not only capital but industry, skill, and zeal. This, it now seems, was what was needed to bring new life and vigor to the colony.

With later political changes came prosperity and depression in close succession. There were hard times from 1820 to 1823 and unusual prosperity from 1823 to 1833. At the close of the latter period, Flinter wrote as follows:⁴

A country that a few years ago was covered with impervious woods and unhealthy swamps, we now find intersected by excellent roads. Unfordable rivers, that in the rainy seasons intercepted the communication between one part of the island and another, are now rendered passable by the erection of bridges. Flourishing towns and smiling villages have risen, as if by magic, where the gigantic trees of the tropical forest, a few years ago, stood in primeval grandeur. The fields where stagnant waters lay infecting the surrounding atmosphere with their effluvia, are covered with rich fields of sugar cane and luxuriant pastures. This scene is enlivened by the comfortable cabins of the islanders, surrounded by groves of plantains and fields of Indian corn. The numerous sea-ports, resorted to by ships of all nations, exhibit everywhere manifestations of the active and extensive commerce carried on both by the mother country and by foreign powers.

One of the striking conditions of the general agricultural situation at this time was the small acreage in crops in comparison with the population. If the available statistics are approximately correct, there was only one acre in crops for every four people.⁵ In 1828, there were 85,076 English acres under cultivation, and

⁴ Flinter, *An Account of the Present State . . . of Puerto Rico*, 10-11.

⁵ Today the United States has approximately 2.8 acres in crops per capita, and Canada has 6.18. J. E. McCord, Jorge J. Serrallés, Jr., and Rafael Picó, "Types of Farming in Puerto Rico," *Puerto Rico Agricultural Experiment Station Bulletin* 41, p. 22 (San Juan, P. R., 1935).

Flinter and other sources point out that although the figures quoted are official they do not necessarily give a complete picture. The statistics are those turned in by a commission of planters of each commune, but as taxes were assessed on the basis of these figures "they give lower estimates because they erroneously imagine that they can thus reduce their taxes."

The land measurement used in Puerto Rico is the *caballeria* which is 10 cords wide and 20 cords long. A cord is 75 castillian yards. Each *caballeria*, therefore, contains 200 square cords, and a cord is one-tenth less than an English acre.

they were utilized as follows: plantains, 21,761; Indian corn, 12,194; rice, 11,855; sugar cane, 11,103; coffee, 9,135 (with 9,135, 572 plants); sweet potatoes, 8,224; yams, 4,696; tobacco, 2,199; cotton, 2,080 (with 2,080,810 trees); pulse, 948; manioc, 763; fruit trees, 103; and horticulture, 15. The total acreage of the island was given as 2,584,000, of which 634,506 acres were in pasture and 728,703 in wood; the remaining 1,146,715 acres being mountains, towns, roads, swampy shore lands, and interior crown lands.⁶ Much of the agricultural land was not tilled due to "that spirit of monopoly which stimulates rapacious men to grasp at more land than they have a just right to, or can possibly cultivate; a monopoly which operates as a direct check on the advance and prosperity of agriculture."⁷

The following tabulation from Flinter's book gives a fairly good index of the agricultural wealth of Puerto Rico in 1830:⁸

Agricultural wealth of Puerto Rico in 1830

| | |
|--|-----------------------------|
| 1277 wooden mills for grinding sugar cane, conducted by free labour generally. | 1224 acres sweet potatoes. |
| 300 iron ditto on estates cultivated by slaves. | 6696 — yams. |
| 148 coffee estates, with machinery. | 1100 — pulse. |
| 340 stills for distilling rum. | 31 — in horticulture. |
| 14,803 acres under sugar-cane. | 16,992,857 coffee plants. |
| 30,760 — plantains. | 3,079,310 cotton trees. |
| 14,850 — rice. | 500 pepper do. |
| 16,194 — Indian corn. | 60,050 cocoa do. |
| 2599 — tobacco. | 85,760 orange do. |
| 1150 — manioc. | 55,760 alligator-pear do. |
| | 45 lime kilns. |
| | 80 ovens for making bricks. |

The produce of the above was as follows:—

| | |
|--|------------------------------------|
| 414,660 quintals of muscovado sugar, of 112 lbs. each. | 29,570 quintals of sweet potatoes. |
| 1,507,769 gallons of molasses. | 7850 ditto yams. |
| 12,165 puncheons of rum, of 100 gallons each. | 4570 ditto pulse. |
| 617,825 loads of plantains. | 250,000 ditto coffee. |
| 63,750 fanegas of Indian corn (two bushels each). | 750 ditto pepper. |
| 34,640 quintals of cured tobacco. | 75,650 hundreds of cocoa nuts. |
| 30,419 mule loads of cassada bread. | 85,780 ditto oranges. |
| | 450,000 bushels of lime. |
| | 5377 thousands of bricks. |

⁶ Flinter, *An Account of the Present State . . . of Puerto Rico*, 158-159.

⁷ *Ibid.*, 160.

⁸ *Ibid.*, 161.

Live Stock

| | |
|------------------|---------------|
| 42,500 cows. | 1112 mules. |
| 20,910 bullocks. | 7560 sheep. |
| 6720 bulls. | 5969 goats. |
| 25,760 horses. | 25,087 swine. |
| 27,210 mares. | 338,454 hens. |
| 315 asses. | 8671 turkeys. |

Sugar offered the greatest opportunity as a commercial crop in 1830. There were then about three hundred large sugar plantations, in addition to nearly thirteen hundred smaller plantations, belonging to poor people who grew only an acre or two of cane and made sugar and molasses for their own use and for sale. On an average, an acre produced 40 quintals of sugar, although some of the richer soils yielded much more. The extraordinarily fertile lands on the south coast, especially about Ponce and Guayama, were generally devoted to sugar. The dry season of this region enabled the planters to have a definite harvest season.

On the west coast, the rich and fertile Mayagüez Valley was well advanced in cane production. In 1828, there were twenty-one sugar estates, sixty-two smaller plantations with wooden mills, and twenty-one coffee estates, besides innumerable small farms. This valley, at the lowest estimation, produced 70,000 quintals of sugar, 55,600 quintals of coffee, 1,664,400 quarts of molasses, and 3,328 puncheons of rum in 1828. Guayama Valley, which five or six years previously had been a wooded tract, had eighteen sugar estates; and in 1830, there were thirty-three, six of them with steam engines larger than any hitherto used on the island.

The sugar industry progressed remarkably for a time. Not allowing for the quantity exported by illicit trade, 414,663 quintals were produced in 1830, or more than double that of 1828. By 1833, however, prices were falling and sugar was selling for only four dollars a quintal. The immense quantity grown in the East Indies was responsible for this drop in prices. There the cost of free labor was only two-thirds that of slave labor in Cuba, Jamaica, or Puerto Rico, and the actual production was about twice that of the West Indies. During the early years of high prices the planters could afford to import food for the slaves, but with the depressed state of affairs plantations for the

growing of foodstuffs appeared in the richer mountain valleys. On the whole, the growing of sugar cane became very unprofitable, although a few large plantations continued to earn a large annual income. In some cases sugar was grown profitably at three dollars a quintal. Even at low prices, cane would always be grown to supply molasses and rum, and for chewing.⁹

Although the soil and temperature of Puerto Rico were peculiarly suited to the production of coffee, no other agricultural crop was so uncertain, due to the fluctuation of prices from twenty-five dollars to as low as three dollars per quintal. The methods of cultivation were simple and inexpensive, and nearly all of the crop was produced by free labor. As the trees were so high that the berries could not be picked by hand, they were left until thoroughly ripe, then shaken down, and put on mats to dry. This procedure gave Puerto Rican coffee its peculiar flavor. Much of the crop was consumed locally as rich and poor alike drank coffee three or four times a day. Even the poorest families often had as many as thirty trees for their own use. Besides, there were always the wild trees in the forests, loaded with berries to be had for the gathering.¹⁰

The quality of the tobacco grown on the island was little inferior to that of Cuba whose fame had spread to every part of the world. It was exclusively the product of free labor. Even the poorest families, white and black, devoted a small strip of land to this plant. The surplus, no matter how small, was taken to the local shopkeeper who was commonly the agent for a large merchant in the capital. The shopkeepers furnished clothes and advanced money at a high rate of interest to the poor cultivators on condition that they sell them their entire crop at a stipulated price, an amount always less than half of its real value. In 1830, 34,902 quintals were exported, but this figure gives no cognizance to the large amounts shipped clandestinely. The greatest needs were adequate funds to carry the growers from year to year, and a system of marketing in which a fair price could be obtained.¹¹

Cotton was produced by free labor, both Negro and white, without capital and with little expenditure of energy. Even the

⁹ *Ibid.*, 175-185.

¹⁰ *Ibid.*, 185-188.

¹¹ *Ibid.*, 189-190.

small children aided in picking it from the trees. The quality equaled the best produced in Berbice, Surinam, or Pernambuco, which commanded the highest price in the European market. An acre of cotton yielded from 150 to 200 pounds, and in favorable years, possibly twice that amount. The crop brought twenty dollars per quintal. The custom of growing corn, sweet potatoes, and yams between the cotton trees also added to its advantage as a crop. Unfortunately cotton did not receive the attention it deserved, for it could have been cultivated as easily in Puerto Rico as in the Bahamas where entire families, with no other income, derived a comfortable living from it. Much more could have been produced for the foreign market as there was a constant demand for cotton and wool by the Spanish trading vessels, and many were forced to go to St. Thomas for a return cargo. There was also an abundance of cotton land that could have been bought much cheaper than sugar land.¹²

Cattle raising was a profitable industry as it required little capital. Although the pasture lands on the north and east coasts where there is sufficient rain were especially good, only three or four individuals there had as many as a thousand head. In the uncultivated sections the cattle were permitted to roam in the *hato* (group) as on the Spanish Main. In some places they were kept in enclosed meadows, as in England, and in the better crop regions they were even staked out and changed three or four times a day. Due to the constant care given them, the cattle were very tame and easily managed on shipboard. In the more arid sections guinea grass was grown for pasture as it is very nourishing. Yearling cattle were ready for market within three or four months after being turned into the fattening pasture. There was no need for special feeding as in Europe. During the dry season many of the cattle on the south coast were sent to the mountains to graze. Some of the richer men, not having enough pasture, rented part of their stock to poorer neighbors with whom they divided the profits, thus helping them to acquire a little capital. Most of the export was in live animals, principally to the French, English, and Danish islands. At least 14,100 head were exported

¹² *Ibid.*, 190-192.

in 1830. This number probably should be larger as the Government returns for that year listed a total of 78,181 head on the island, but the exact number can never be known as there was considerable contraband trade. In spite of the number of cattle large amounts of butter and cheese were imported annually.¹³

Indian corn, yams, potatoes, and other crops yielded abundantly. In 1832, 1,500 fanegas of Indian corn were exported. Such figures should be increased by about 50 percent as there is no record of corn, yams, plantains, and the like that were exported without duty.¹⁴

The crops thus far considered are those that entered foreign trade. There is little known regarding the acreage or the amount of products consumed at home. In the early years, the high prices received for exports caused the growers to look with contempt on the cultivation of provisions for home consumption. Consequently the island, though teeming with fertility, was dependent on foreign countries for food and general necessities. With little extra effort the people could have had an abundance of wholesome food. The extraordinary productivity of the island is well shown in the plantain. This valuable fruit may well be considered the bread of its inhabitants. "It might be made, perhaps, an article of valuable exportation, and be looked upon as a luxury in foreign countries."¹⁵

Of the food crops consumed locally rice was one of the best as the yield was large and the quality excellent. Some lands yielded as many as three crops annually. In 1831, the island produced 76,000 quintals, all of which was consumed on the island. The captain-general ordered the departments to compel every peasant to plant one or two acres in provisions. As a result, rice production increased, 410 quintals being exported in 1833.¹⁶

Horticulture was little understood or practiced. With the exception of vegetables, badly cultivated, there was nothing in the form of a garden. Cauliflower and peas grew in different

¹³ *Ibid.*, 162-168.

¹⁴ *Ibid.*, 194.

¹⁵ *Ibid.*, 198.

¹⁶ *Ibid.*, 193-194.

localities, and other European vegetables could have been produced with little trouble. Yet few of the estates raised enough for their own use.¹⁷

The breeding of animals, other than cattle, was relatively unimportant. The number of sheep was small, although there must have been twice the 7,334 listed in the official estimate. They were not profitable as the wool degenerated into a species of hair; the mutton, however, was equal to the best. The 8,730 goats were less useful and were found only in the more sterile tracts. Although pork was highly prized, hogs were unimportant, and lard was a regular import. The horses were small, with thin legs and necks, but very hardy and sure-footed.¹⁸

Many other crops could have been grown, had the attention of the free laborers been directed to them. Indigo grew wild in many parts of the island, thus indicating that it could have been cultivated, and the demand for it was sufficient to have justified the attempt. Although conditions were well adapted to the growing of cacao, the hurricanes made its cultivation precarious, and there was not a single cacao plantation on the island.¹⁹

One notes with regret the rapid destruction of the magnificent forests. Along some parts of the coast timber was already growing scarce due to the improvident manner in which it had been cut for charcoal. The mountains were covered with timber of the best quality for construction. The Government wisely ordered three trees planted for every one cut, as a supply of timber for the building of ships, gun carriages, and houses was of vital importance. In 1830, timber valued at \$21,000 was exported through the customhouses, exclusive of that shipped secretly.²⁰

The life and habits of the people were simple. The *xívaros* (now *jíbaros*) were very happy, though lacking in ambition. They would not steal but thought it fair to overreach in any bargain. Their hospitality was proverbial, yet they were ready to fight on the slightest provocation. As there were no inns the traveler was cheerfully received in any home and no matter how

¹⁷ *Ibid.*, 200-201.

¹⁸ *Ibid.*, 168-170.

¹⁹ *Ibid.*, 188, 192.

²⁰ *Ibid.*, 199-200.

long he stayed the host insisted the time was all too short. To offer a pecuniary reward would have been an unpardonable insult. Even the poorest *xivaro*, with nothing but a roasted plantain, freely shared it, and gladly tendered his only hammock to the stranger.²¹

The houses were built of wood with little regard for comfort or convenience. Supported by poles deeply and firmly fixed in the ground, the first floor was about eight feet from the earth. The space beneath served as a stable for horses and was left open so a man on horseback could enter it. Sometimes one or two storerooms were also built there. A large wooden block to facilitate mounting horses was placed at the bottom of the staircase which led to the first story. The windows had no glass but were filled with sliding boards, leaving the rooms in darkness during heavy winds or rain. The better houses had roofs of wooden shingles. Some houses copied the styles of the foreign communities, using Persian blinds and other comforts and conveniences. Many were well furnished and the sitting rooms or parlors were spacious. Most people, however, persevered in having many hammocks and few chairs. The kitchen, built apart from the main house, was connected by a bridge of cane or boards. Some of the poorer cabins had doors, others did not.²²

The merchants may be grouped into two main classes, the consignees for European and American vessels who received a commission for the sale and purchase of their cargoes, and another group, which, with capital of their own or credit, purchased goods and sold them in shops or to smaller merchants in the towns and villages of the interior. The principal shopkeepers generally went to St. Thomas every three months for supplies. Every town and village had many shops and even along the highways they could be seen with dry goods, earthenware, wine, liquors, plantains, and other fruits of the country mixed promiscuously. These minor shopkeepers accepted coffee, cotton, tobacco, and cattle from the country people in exchange for dry goods, salt fish, lard, and other foreign provisions.²³

²¹ *Ibid.*, 78.

²² *Ibid.*, 76-78.

²³ *Ibid.*, 106-107.

High customs duties led to smuggling and eventually defeated their own purpose. Much confusion was caused by the almost infinite variety of duties imposed, such as the imports of Spanish vessels from Spanish ports and colonies, from foreign ports, or even from coastwise trade, and the numerous classifications of the various foreign vessels. St. Thomas was a free port and its trade was usually conducted in small schooners and sloops under Spanish colors. In exchange for the manufactured goods and foreign produce which constituted most of the exports, it received cattle, hides, coffee, sugar, molasses, lumber, etc. With the beginning of direct trade with England, France, and Germany importation from St. Thomas decreased. Smuggling was so extensive that the value of smuggled goods was probably half that of legitimate shipments. With high customs duties the honest dealer was at a distinct disadvantage, and he changed his figures for protection.²⁴

The United States dominated the trade of the island, receiving about half of its exports and supplying a fourth of the imports. This trade was more favorable and more important than that of any other country as the products received were not luxuries like the toys, baubles, and puppets from France, but necessities, such as salt fish, flour, butter, lard, grain, lumber, and furniture. The United States supplied the planters with staves for their sugar hogsheads and rum puncheons. These staves constituted an active circulating capital as they were resold to the importer in the form of casks filled with produce. The chief articles exported to the United States were sugar, rum, molasses, and coffee. Besides affording an inexhaustible and cheap supply of much needed commodities, the United States was the best and surest market for the planters' products. Puerto Rico imported goods valued at \$602,390 from the United States in 1830, and exported \$1,680,857 worth in return, thus netting the island a balance of \$1,078,467.²⁵

In many respects Puerto Rico of today is not vitally different from a century ago. The same products are grown, only in a

²⁴ *Ibid.*, 105-122.

²⁵ *Ibid.*, 123-124.

somewhat different ratio, and the same poverty confronts most of the inhabitants. The *xívaro* has become the *jíbaro*, but he is still poor and ignorant, and with even less land for his use. The ratio of crop land to population has been decreasing, but the poor still manage to exist.²⁶

A different standard for measuring well-being is used in 1935 from that of 1835. With this in mind, general conditions are much improved, although the state of the *peones* is much the same. The history of foreign trade shows progress in commercial relations, especially since American annexation. In spite of the influx of American capital, greater efficiency through mechanization, and the free admission of sugar to the world's largest market, the living conditions of the peasantry have not improved. The sugar growers have greatly prospered, increasing the acreage from 61,500 in 1898 to 238,000 in 1930, and, what is more significant, the yield from $\frac{1}{2}$ ton per acre to $2\frac{7}{16}$ tons.

American capital and skill brought new hope to Puerto Rico in 1898, much as did the *Cédula de Gracias* in 1815, but the change of sovereignty by no means ironed out all the difficulties, rather it intensified them. The rate of increase in population is almost twice that of the world as a whole. It has increased from 953,000 in 1899 to 1,544,000 in 1930. During this same period the death rate has been lowered gradually until the ratio of births over deaths is 36.5 to 20.4. The ominous feature is that the birth rate bears no relation to conditions of industry, opportunity, or even food supply. A still greater intensification of agricultural production may ameliorate conditions for a time, but it cannot solve the problem of ever-increasing overpopulation. Some hope has been raised by wholesale migrations, but their continuance

²⁶ According to the Federal Census of 1930, the total population was 1,543,913. Recent measurements give the area as 3,339.5 square miles, or 2,137,280 acres, making the population density 462 per square mile. As only 1,220,000 acres are improved, the density is one person to every .79 of an acre of "improved land." Out of this, not more than 650,000 acres are in cultivated crops, distributed as follows: sugar, 238,000; coffee, 162,000; corn, 70,000; tobacco, 53,000; sweet potatoes and yams, 48,000; beans, 41,000; pasture, grass, and forage, 500,000; and balance in minor crops. See J. E. McCord, Jorge J. Serrallés, Jr., and Rafael Picó, "Types of Farming in Puerto Rico," Puerto Rico Agricultural Experiment Station Bulletin 41 (San Juan, P. R., 1935).

as an amelioration of the problem does not seem feasible or even possible.²⁷ The only solution seems to be education to decrease the birth rate until it is more in line with a decent standard of living.

Of the many other problems in Puerto Rico, that of land-use seems to be the most pressing. The landless *jíbaro* is a pathetic figure. Almost unbelievably poor, he cannot raise food for his large family for want of land, and his wage, even when he has work, is pitifully small and wholly inadequate.²⁸ Sugar, the only crop of dependable profit, occupies about half of the crop land and practically all of the good agricultural land, crowding food crops more and more into the marginal areas. The sugar industry is controlled by a relative few, dominantly influenced by continental Americans to whom goes the lion's share of the profits. Employment is seasonal, but the *peones* are woefully inefficient and, because of the superabundance of labor, the wage earned is ridiculously low. Puerto Rico needs another *Cédula de Gracias* for the benefit of the serf-like peasant, the *jíbaro*.

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²⁷ Clark, *Porto Rico and Its Problems*, 515-520.

²⁸ José C. Rosario, *The Development of the Puerto Rican Jíbaro* (University of Puerto Rico Monograph C 1, 1935); Clark, *Porto Rico and Its Problems*, 537-635.

THE FRENCH AGRICULTURAL MISSION TO EGYPT IN 1801

In the history of politics, the Bonaparte expedition to Egypt is remembered as a prelude to the rise of its young leader, the future Emperor Napoleon, to supreme power in France and in Europe. In the history of science, it is remembered because of the discovery of the Rosetta Stone; in the history of naval warfare, because of the Battle of the Nile, but in the history of agriculture the dreams and the aspirations of the expedition appear to have fallen completely into limbo. Even contemporaries quickly forgot them, distracted as they were for years afterwards by the stream of European events. The agricultural mission to Egypt in the spring of 1801, although it did not succeed, serves as an excellent introduction to the subject, for it illustrates the determination of the conquerors to develop the new colony.

The origins of this mission, as well as those of the expedition in 1798, can be traced directly to the ruin of the French West Indies during the Revolution.¹ Cut off from its ancient source of sugar, cotton, and indigo, France sought in nearby Egypt a region where these commodities could be obtained. Bonaparte fell in with the plan. During the first month of the occupation, he displayed his interest in the agriculture of the country by commenting on the good quality of its produce as found by the invaders. If so much could be accomplished under the miserable despotic rule of the Mameluke beys, the enlightened French, it was hoped, could transform the Nile Valley into a veritable Garden of Eden. They did not, however, expect to do this by themselves alone; they proposed to enlist the aid of the inhabitants who would presumably profit from observing European

¹ See the writer's *France and the Colonial Question: A Study of Contemporary French Opinion, 1763-1801* (New York, 1932), particularly the last chapter. Having abolished Negro slavery in 1794, thus sealing the doom of the sugar islands, as many thought, the French wished to found a new colony in Africa on the principle of free labor.

methods of cultivation. To this end Citizen Nectoux early recommended to the Institute of Egypt the founding of experimental stations to be placed under the direction of former Saint Domingue colonists.²

Nectoux's proposal was premature. Separated from France by the destruction of the fleet, the leaders of the expedition had little time to think of the agricultural development of the country; military measures against the enemy within and without held first consideration. This situation did not change until Bonaparte had returned to France and established himself firmly in power. After his brilliant second Italian campaign followed by the victory of the French at Hohenlinden in December 1800, the First Consul was relatively free to promote the welfare of Egypt which he seems ever to have kept in mind. The efforts in this direction of his faithful lieutenant, General Abdullah Jacques Menou, pointed the way.

Menou was the third and the last commander-in-chief of the army of occupation. From the outset he had taken the cause of Egypt to his heart as indicated by his acceptance of the Mohammedan faith and his marriage to a native woman. He lectured his countrymen severely when they were remiss—which was not infrequent—in their treatment of the inhabitants. But above all Menou pleaded in season and out for the encouragement of agriculture; he wanted Egypt to become the first colony in the world, that is, the first in the production of tropical commodities. He evidently found in Bonaparte a sympathetic listener during the first year of the occupation. Then came the régime of Kléber who turned a deaf ear to Menou's ideas. To Kléber, Egypt was nothing but a source of revenue. But the stars in their courses were fighting for Menou and his cause. Kléber died under the assassin's knife in June 1800, whereupon Menou became commander-in-chief. True to his oft-expressed views in favor of the development of Egypt the new commander proceeded to establish a *jardin des plantes* for experimental purposes. The next step

² Saint Domingue, now the Republic of Haiti, had been not only the most important French colony but also the most important European possession in the West Indies.

was to write to France for assistance in this enterprise. Confident of the support of the First Consul, Menou directed a letter to him in person requesting that he send to Cairo two varieties of potatoes as well as grafts for starting peach, apricot, pear, and apple trees. Nor did the general propose to let these plants perish for lack of proper care: he also requested two or three trained gardeners.

This letter was dated September 24, 1800. It is impossible to tell how soon it reached Paris because the close watch of the English in the Mediterranean often led to months of delay, if not to outright interception of the mails. In any case Bonaparte did not cause it to be printed in the *Moniteur* until December 16.³ Whether by chance or design the moment was propitious for calling public attention to the plans for developing Egypt, as the recent victory at Hohenlinden assured peace on the Continent. A week later the First Consul inserted in the same journal another communication from Menou in which the general announced that he was sending some samples of loaf sugar in order that people in France might see what Egypt could produce.⁴ The favorable response of the public to such news undoubtedly influenced the Government to go far beyond the modest suggestions of Menou in sending him support for his *jardin des plantes*. A bundle of manuscripts preserved in the Archives Nationales enables us to trace the reaction to Menou's dispatches.⁵

From Soissons a nurseryman named Lejeune wrote to the Minister of the Interior to say that he had learned by the papers of the Government's intention to send fruit trees to General Menou.⁶ Desirous of contributing to the success of the undertaking, Lejeune described in detail a method of preserving the trees in transit, which, he declared, rested on long experience. In 1783 he had shipped to England a large number of trees which

³ A number of Menou's dispatches were reproduced in the same issue.

⁴ Menou to Bonaparte, 23 brumaire an 9 (Nov. 14, 1800).

⁵ Rapports et correspondance concernant l'expédition d'Egypte au point de vue agricole, ans 7-10 (1798-1802); Expédition d'Egypte: demandes d'emplois agricoles, an 9 (1801-1816). Archives Nationales, F¹⁰ 498.

⁶ 9 nivôse an 9 (Dec. 30, 1800).

lay in a boat at Calais from November to the following March and, despite the severity of that winter, none died.

Lejeune's suggestions made a favorable impression. An abstract of his letter was prepared for future use and the Minister sent him a note of thanks. But not all the ideas submitted to the Government received the same favorable attention. Those of two other writers, Quénet Duhamel and Pouillé Ducan, were rejected or ignored. Quénet Duhamel, who claimed to have been a deputy from the West Indies to the Constituent Assembly, proposed to go to Egypt to introduce the sugar industry as he had known it in Saint Domingue for twenty-five years.⁷ In return for this service his demands were grandiose indeed. Not only did he ask the Government to furnish him with 400 laborers and 100 horses and such farming implements as were necessary but to advance 15,000 francs to enable him to pay his debts in France. No wonder the officials to whom this proposal was submitted reported that it was unnecessarily costly especially since Egypt already produced good native sugar.

Pouillé Ducan met with an even colder reception at the hands of the Government, possibly because he was so importunate. Within the period of a month he submitted no less than four communications on Egypt to the Minister of the Interior.⁸ The latter finally suggested that he direct himself in future to the Minister of the Colonies.⁹ Pouillé's ideas in fact were far from helpful or constructive. Only one of his letters, dated February 18, 1801, is preserved in the archives but if it is a fair example the others contained little. In this letter he declared that since writing the first he had read all the memoirs of the savants in Egypt and found none of interest except that of Nectoux presented to the Institute in October 1798. This was not to say, however, that Nectoux saw things in the proper light. His picture of thriving coffee, indigo, and cotton plants, it seemed to Pouillé, fitted a *jardin des plantes* rather than a practical system

⁷ Quénet Duhamel to Minister of the Interior, 26 nivôse an 9 (Jan. 16, 1801).

⁸ The first of these was dated 23 pluviôse an 9 (Feb. 12, 1801) and the last 13 ventôse an 9 (Mar. 4, 1801).

⁹ 22 ventôse an 9 (Mar. 13, 1801).

of agriculture. Moreover, Pouillé feared that years would be lost in footless experimentation before results were obtained, if ever, and posterity, not the present generation, would enjoy these results. His solution for developing Egyptian agriculture quickly was simple: cultivate tobacco. To judge by his remarks no other plant could do as much for the country. With tobacco to offer in exchange, the French could enjoy a lively commerce with the interior of Africa. In one of his other letters Pouillé proposed to conduct a company of Belgians to Egypt in order to introduce the cultivation of tobacco. But he seems never to have made it clear why tobacco offered more advantages than any other product.

In the meantime, plans were under way to send a company of gardeners to Egypt. Some idea of the importance attached to this mission may be gained from the number decided upon. Menou had asked for two or three: the Government selected eight men for this service. Even this number seemed insufficient to Mayor Mackau of Vitry: he urged Citizen Thouin, professor of agriculture in the Museum of Natural History, who seems to have had charge of the task of preparing the mission, to add two more, a not insignificant suggestion since the Mayor was meeting the expenses, having originally offered to provide both gardeners and plants as soon as Menou's letter appeared in the *Moniteur*.¹⁰ Thouin passed the suggestion on to Forfait, Minister of the Colonies. Forfait, in turn, on February 21, 1801, wrote approvingly of it to his colleague, the Minister of the Interior. "As it seemed to me," he declared, "that this idea entered into the views of the government whose desire is to favor the migration to Egypt of all individuals who would like to go there [provided they have] a useful profession, I have not hesitated to approve Citizen Thouin's proposition."

It is not clear whether Chaptal, the Minister of the Interior, was likewise favorable to increasing the size of the expedition. In any case, the expense account given with the other documents lists only four nurserymen and gardeners each accompanied by one son making eight persons in all. The details given in this

¹⁰ Mackau to Minister of the Interior, 27 frimaire an 9 (Dec. 18, 1800). His offer was accepted by the Minister on 4 nivôse an 9 (Dec. 25, 1800).

expense account have a certain interest. Before departure the older men were allowed 1,000 francs each and the younger men 150 francs each as gifts for their families. Arrived at their destination, their yearly salaries were to be 2,000 francs each for the older men and 500 francs each for the younger. The Government also provided clothing. Eight complete suits with boots and hats for everybody were estimated at 1,500 francs. As for seeds and plants, no less than seventy-two boxes of these were listed at a price of 2,028 francs including garden tools. A separate item of 9,289 fruit trees cost 4,391 francs while the total costs of the expedition amounted to 27,219. This sum included the traveling expenses of each gardener to the port from which he was to embark.

Like so many missions sent by the French to Egypt, this enterprise was ill-starred. The gardeners with their supplies sailed from Toulon on the *Vierge des Neiges* on April 21, 1801.¹¹ High hopes were held out for its success. Replying, on July 11, to a new proposal for developing Egyptian agriculture, Chaptal announced that "several gardeners and nurserymen have gone to that colony with a large quantity of plants and seeds and when peace has restored tranquillity to that country the enlightened agriculturists who have been sent there will obtain for its agriculture every possible improvement."¹² Chaptal did not yet know that the gardeners had been captured at sea a month before. On the night of June 8 the *Vierge des Neiges* had fallen into the hands of the English off the coast of Tour-des-Arabs.¹³ And before the summer was out, the English forced the surrender of the French army in Egypt, thus putting an end to the aspirations of their enemies to improve the country's agriculture. Several months earlier Colonel Robert Anstruther of the British army of occupation had written in regard to Egypt: "One must feel some regret that there is a possibility of its returning to the horrible government of the Turks, still more that there is a chance

¹¹ See Forfait to Chaptal, third complementary day an 9 (Sept. 20, 1801).

¹² Chaptal to Prefect of Pas-de-Calais, 22 messidor an 9 (July 11, 1801).

¹³ See footnote 11.

of its remaining with the French."¹⁴ The researcher, on his part, cannot but regret that the exigencies of war between two civilized powers meant the cessation of the experimental labors of the vanquished.

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The National Archives
Washington, D. C.

¹⁴ Anstruther to Brownrigg, Camp near Alexandria, Apr. 20, 1801. *Dropmore Papers*, 7:10.

THE ADAPTATION OF THE AGRICULTURAL SYSTEM TO SUB-HUMID ENVIRONMENT

ILLUSTRATED BY THE ACTIVITIES OF THE WAYNE TOWNSHIP
FARMERS' CLUB OF EDWARDS COUNTY, KANSAS, 1886-1893

One of the most interesting problems in the history of the westward movement in the United States is the adaptation of the agricultural system to environment. The first and probably the most difficult stage in that process was met by the original colonists from Europe. After the first discoveries of basic crops and cultural methods suitable to the different latitudes of the Atlantic seaboard, the succeeding generations did not find it necessary to make a large number of basic changes at any one time, so long as settlement was moving through the humid and forested regions. The situation was different, however, on reaching the transition country between the well-watered areas and the plains country, relatively treeless and deficient in rainfall for the type of crops and cultural methods practiced during the advance from the seaboard. On the plains proper the difficulties were met with full force. Had the line of settlement moved as slowly through the transition belt into the plains as it had during the earlier stages of the frontier, it is possible that the adjustment might have been made without excessive hardship, but the railroads carried the rate of settlement much faster than the settlers could adapt the agricultural system to the new habitat.

There are several possible approaches in a historical study of the process of adjustment, and each affords a view of a different facet of the problem. Only when all these approaches have been utilized can the matter be seen in its entirety. In the present study the central interest is a farmers' club and its consideration of the intensely practical problem of making a living in west-central Kansas between 1886 and 1893. Failure to find at least a partial solution meant destitution, and for many individuals of the group that was the eventual outcome. They had to make

their own agricultural experiments and bear the expense and losses entailed by failure. The agricultural colleges and the experiment stations had not yet become a practical factor in the situation.

The Santa Fe Railroad was built through Edwards County along the north side of the Arkansas River during the summer of 1872, and the first settlers arrived about the same time. Until 1877 settlement was limited to the north side of the River, partly because of the broad sandy river-bed and the ridge of shifting sand hills about three miles wide along the south bank. Possibly a few settlers ventured to the south side before 1877, but no definite record of occupation has been found prior to that year, when a considerable number moved eastward from Kinsley, the county seat, and southward from Larned in Pawnee County, to take possession of the sandy-loam land beyond the hills. Drouth and terrific heat during 1879 and 1880 drove out most of these pioneers, the first casualties in the advance attack on this sector of the plains. Resettlement followed during 1883-1886, so the Census of 1885 presents a cross-section view of the population and the agricultural system of the recently occupied Wayne Township.¹

There were 70 dwellings, many of them built of sod, which housed 77 families. The population consisted of 122 married persons, 4 widowers, 1 widow, 54 adult single persons, and 134 minors and children. There were 181 males and 134 females. Of the 315 people, 20 men and 6 women were foreign born, mostly from England and Scotland. Classified according to birthplace, the farm operators and their wives, 107 in number, are credited as follows: New York, 28; Ohio, 18; Illinois, 15; Pennsylvania, 10; Kentucky, 5; Iowa, 4; Wisconsin, 4; Michigan, 3; Virginia, 3; Massachusetts, 2; Indiana, 2; and for several other States, 1 each. The Thirteen Original States contributed 43, and these, together with those from Michigan, Ohio, and Kentucky, totaled 69. Classified according to the State from which they came to Kansas, the sources were: New York, 24; Illinois, 21; Ohio, 15; Pennsyl-

¹ The original State census records are deposited with the Kansas State Historical Society at Topeka.

vania, 9; Kentucky, 9; Iowa, 5; Virginia, 2; Michigan, 2; District of Columbia, 2; Indiana, 2; Nebraska, 2; and several others, 1 each. In this list the Original States contributed 37, and this number, together with those from the first tier to the west, totaled 63. These figures bring out the highly significant fact that the farm operators for the most part migrated directly from the Old East to the semi-arid plains, and furthermore, that the States immediately east of Kansas made almost no contribution to the population of Wayne Township.

There were 60 men who were farm operators and 47 women who were farmers' wives or land operators in their own right. The average age of the men was 40.83, and of the women 38 years, or a combined average of 39.6. The figures merely record in statistical language the fact that the average farm operator had arrived at about middle age. Stated negatively, they were not young people just starting out in life. Only 9 of the 60 men were between 21 and 29 years of age; 20 were in their thirties, 17 in their forties, 10 in their fifties, and 4 in their sixties. In this group 51.6 percent were 40 or above.

The farmers of the township may be divided into three groups,—ranchers, large farmers, and small farmers. In the first group there were 12 men and 9 women. They were older than the average of the community by about 5 years, the average age of the men being 44.8 and of the women 42.3 years. Five of the 12 men were 50 years or older. If the sons associated with their parents in the business of ranching are excluded from the calculations, the average age of the ranch group is 50 years for the men and 48 for the women.

The large-farmer group included 20 men and 18 women. The average age of the men was 42.35 and of the women 39.66 years, the combined average being 41.6. Six of the 20 men were over 50 and 12, or 60 percent, were 40 or more. The eldest farmer of this group was 64 and the youngest 26. The eldest married woman was 61 and the youngest 23.

The small-farmer or 160-acre group included 28 men and 20 women. The average age of the men was 38 and of the women 34.1 years, the combined average being 36.4. These averages

were about three years below those of the whole community and put them just barely under 40. The eldest man in this group was 60 and his wife 56, while the youngest married man was 24 and the youngest wife 18. The next youngest married woman, however, was 24. Twelve of the 28 men, or 42.8 percent, were 40 or more; 13 were in their thirties, and 3 in their twenties.

Of the twelve ranches, two produced sheep, and the rest cattle. Among the latter, one emphasized dairying while the others were almost exclusively beef producers. The two sheep ranches were unfenced, and the owners made little preparation for winter feed. The smaller of the ranches included 1,540 acres and carried 1,000 head of sheep during 1884. Two hundred and seventy-five tons of prairie hay were put up for the winter of 1884-85. Only 10 acres were planted to sorghum and 5 acres to millet in 1885. No other livestock or crops were grown. The larger sheep ranch embraced 1,760 acres, and carried 3,000 head of sheep in 1884. Although no prairie hay was cut that year, the planting program for 1885 included 75 acres of field crops, 20 acres of rye, 20 acres of sorghum, and 30 acres of millet. This ranch had 2 horses, 1 milch cow, and 2 other cattle. The wool clip of the two ranches in 1884 was 6,000 and 8,000 pounds, respectively. There is no indication that shelter was provided on either ranch. The winter of 1884-85 was severe and in consequence the first ranch lost 400 and the second, 1,000 sheep from starvation and exposure.

The story of the cattle ranches is not so dismal. Their average size was 2,144 acres, but they ranged from 960 to 4,800 acres. A little later, the Inter-State Galloway Cattle Company, having acquired the Norton ranch, held some 10,000 acres, mostly in one unit. Of the 12 ranches totaling 25,730 acres, 7 had fenced land amounting to 10,760 acres. As there were wide variations in ranch management, it is difficult to state what might be called typical. Based on averages, the typical ranch had 2,144 acres, and was stocked with 5 or 6 horses, 4 mules, 8 or 9 milch cows, and 193 other cattle. The largest herd of cattle numbered 465, and the smallest 36. The largest herd of milch cows was 60, but 2 had 20 and 14 respectively, although most of the others had from 1 to 5. Nine of the 12 ranches had milch cows, and 5 kept hogs.

The census figures on the number of cattle on each ranch are limited presumably to the home herds. In addition, some cattle from Texas and New Mexico were driven or shipped in for fattening. It is not known how many ranches followed this practice. Somewhat later information summarizes the procedure of the Inter-State Galloway Cattle Company on the enlarged Norton ranch in 1886. The home herd consisted of 600 head of thoroughbred Galloways and Shorthorns.² About 700 to 800 transient 3- and 4-year olds were driven in for feeding, and then shipped to market in the fall or winter. The field crops planted to support this livestock program included 150 acres of corn, 200 acres of sorghum, 100 acres of oats, and 60 acres of millet. The ranch also raised a large number of hogs and chickens, and had the only bearing orchard in the Township, consisting of 6 peach, 4 plum, and 8 cherry trees.

The field-crop program of the other and more typical ranches may be presented on the basis of averages as 60 acres of corn, 34 acres of millet, and 37 acres of sorghum, together with either 36 acres of oats, 34 acres of winter wheat, or 26 acres of rye. Only two ranches grew potatoes. The average cut of prairie hay was 42 tons. The average hay rations for the winter would thus be 1 ton of prairie hay for 5 animals. Some of the variations should also be indicated. One rancher planted 200 acres of corn, 60 acres of oats, and 40 acres of sorghum. Another planted from 30 to 35 acres each of wheat, corn, barley, oats, and rye, 20 acres each of sorghum and millet, and cut 150 tons of prairie hay. A less favorable instance was a ranch that planted only 30 acres of millet and cut 200 tons of hay, although it went into the winter of 1884-85 with 300 head of stock. The death loss on this ranch was 65 head.

The ranch of Lewis, Price and Company emphasized dairying. It carried 60 head of milch cows in 1885 and had produced 8,000

² There may be some question whether all were pure blood. It is certain that many of them were good grade stock. This ranch was only one of a chain owned by the company. A steer bred and raised on this ranch took the Grand Sweepstakes in the dressed carcass class at the Chicago fat-stock show in the winter of 1887 and dressed 66 percent of live weight.

pounds of butter during the preceding year. In addition to milch cows and field crops it had 250 other cattle. Of the 12 ranches only 3 had fruit trees, and 3 had 5 to 15 acres each in artificial timber, mostly cottonwoods. All of the ranches had some farm machinery, but the value of that on one ranch was only \$40. The largest machinery valuation, that of the Lewis ranch, was \$1,000. The average valuation was \$336.

The ranches, not only in Wayne Township but in this section of the State, were of mushroom growth. Relatively few ranches provided shelter or adequate feed. The losses during the winter of 1884-85 were heavy. The township census enumerator wrote the following comment at the end of his report in the spring of 1885: "Most of the cattle died for want of food and not being acclimated & for want of shelter. Sheep ditto." After another hard winter, the *Kinsley Graphic* for January 25, 1886, reported that some stock raisers said the heavy losses meant a revision of the industry in Western Kansas. The raising of vast herds of common stock would be discontinued, more attention given to better grades, and shelter provided during storms. On February 26, however, the same paper remarked, "Slowly the cattle baron has rounded up for the last time his thousands to give room to the vast corn fields and seas of grain."

In some ways the large farms possessed features little different from the smaller ranches and in others little different from the small farms. The 19 farms classified as large had between 320 and 640 acres, excepting one with 283 acres. Twelve were half-section farms, and three were full sections. For the most part the farm economy was of the mixed type, livestock and field crops. Five of the farms were partly fenced, the total enclosed acreage being 1,090, or an average of 200 acres for each. The remaining 14 had no fences.

The average large farm had 2 or 3 horses and sometimes a team of mules, although 2 farms had neither. Again, the average farm had 10 milch cows, 14 other cattle, and 5 hogs. The variations from the average were great, however, as one of the farms had 50 milch cows and 45 other cattle, while a second had 34 and 35 of each. The large farm usually had 3 milch cows, 3 other cattle,

and 4 or 5 hogs, rather than the average. There were 2 farms with no milch cows, 4 with no other cattle, and 4 with no hogs, and several with only 1 each.

The large farmers planted a total of only 1,621 acres in field crops, or an average of 85 acres per farm. The percentage distribution of this acreage among the different crops was as follows: corn, 44.4; millet, 18.5; oats, 13; winter wheat, 11; sorghum, 6; barley, 5; and rye, 1. The average farm had 38 acres of corn, 17 acres of millet, 14 acres of oats, 14 acres of sorghum, either 26 acres of wheat or 11 acres of barley, and a few potatoes. The variations from the average were not so great in field crops as in livestock, probably not exceeding 50 percent in either direction from the average.

All of the large farms had machinery, although in several cases there was very little. The average valuation of farm implements was \$85. Two large farms had \$200 worth of machinery, while one had only \$20 worth. Seven of the large farms had growing orchards, one with 538 fruit trees and another with 155, but most of them ranged from 5 to 60 trees. Six of these farms were growing artificial timber covering 1 to 8 acres.

The small farms were most numerous as there were 29 farms consisting of 160 acres,—the traditional homestead, tree claim, or preëmption claim offered by the Government as a subsidy to those who presumptively were too poor to otherwise acquire a farm home. The small farm represented the mixed type of agriculture,—few livestock and some field crops, but very little of either. None of the farms in this group had a fence.

The average farm had one team of horses or mules, although six farms in the group had neither. It is not known whether these used oxen, depended upon exchanging work with neighbors, hired the necessary team work, or bought teams after the census was taken in March. Thirteen of the 29 farms had an average of 5 milch cows each, but the other 16 had none. Seventeen of the farms had an average of 8 other cattle, but 12 had none, 3 had sheep, and 16 had an average of 6 hogs each, but 13 had none.

The small farms had a total of 1,192 acres in field crops, or an average of 41 acres per farm. The percentage distribution of this acreage among the different crops was as follows: corn, 48;

millet, 14; winter wheat, 13; sorghum, 9; oats, 8; barley, 4; rye, 2; and potatoes, 1.1. The average farm had 22 acres of corn, either 10 acres of millet or 8 acres of sorghum, but not both, and of the grains, 9 acres of oats, 19 acres of winter wheat, or 9 acres of barley. It may be said for emphasis that only 8 farms raised wheat at all, while 11 raised oats, and 5 raised barley. Thirteen farms of the 29 had 1 acre of potatoes. Only 5 of this group put up prairie hay.

The small farmers as well as the ranchmen and large farmers lost much livestock during the winter of 1884-85. One farmer lost 2 of his 3 horses, which left him with a horse and a mule for work stock. He had no milch cows, other cattle, or hogs. Of his flock of 650 sheep, he lost 200. Another farmer lost 2 of his 4 horses, 1 of 4 cattle, and his 2 hogs. A third farmer had no livestock except 6 cattle and he lost 4 of them. It may be significant that not a single milch cow died. The historian can only speculate, but probably the milch cows received better care because the family living depended directly upon them. Another interesting fact is that no farmer lost a mule, but in spite of this record it was a long time before the farmers generally turned to mules for work stock. The total valuation of the farm machinery on the small farms in the Township was \$670, or an average of \$35 each for the nineteen farms that had any worth listing.

The settlers who came to the Kansas plains country from the timbered lands of the east missed trees possibly more than anything else. Just how many of the twenty-nine small farmers tried to grow trees cannot be known, but eight had planted 394 fruit trees by 1885, an average of nearly 50 trees per orchard. None of these trees had reached the bearing age. Five farmers had artificial timber, mostly cottonwood, making a total of 38 acres. Probably these plots were mostly tree-claim plantings.

A people engaged in subduing a new country were necessarily engrossed in the question of what crops to grow and how to grow them. The first move in the direction of an organized approach to their common problems appears to have originated with the sheep and cattle men who formed the Edwards County Wool Growers' Association, with J. M. Lewis, Sr. (Mass., Va.), as

president, and I. B. Lawton (Ohio, Ohio), as secretary.³ Both officers were ranchers, Lewis being interested in dairy and beef cattle, and Lawton in sheep. At the meeting in February 1884 this body decided to adjourn until March 1 to consider the organization of an association to include all farm and livestock interests.⁴ This move seems to reflect in part the periodic shift from field crops to livestock which coincided with the recurrence of wet and dry years. With a returning period of wet years and a rush of small farmers into the predominantly range country, the field-crops cycle was being recognized.

The meeting on March 1 resulted in a new organization, the Edwards County Industrial Association, which recommended the holding of a county fair. When completed Lawton and Lewis were president and vice president, respectively, and J. Ferguson, secretary. Each township was authorized to have one representative to act with the officers as a board of directors.⁵ For some reason the new organization did not function, and on December 6, the *Kinsley Mercury* suggested its revival and added the admonition, "get together and wear off some of the rough edges and you will find yourself better, happier and richer men."

The next step was apparently taken on August 22, 1885 at a citizens' meeting in Kinsley, with J. M. Lewis, Sr., acting as chairman and the town business men taking a prominent part.⁶ The Edwards County Fair Association was organized and the first fair was held on October 21-22. In order to secure the active participation of the entire County it was recommended that farmers' clubs be organized in every township to cooperate with the central body. Most townships acted on this suggestion during July and August 1886 and functioned for a while, but only one, the Wayne Township Farmers' Club, maintained its activities through a substantial period of time.⁷

³ In naming the individuals who took a leading part in these activities, the State of birth and the State from which they came to Kansas are placed in parentheses after the name.

⁴ *Kinsley Graphic*, Feb. 26, 1884.

⁵ *Ibid.*, Mar. 4, 11, 25, 1884.

⁶ *Ibid.*, Aug. 28, 1885.

⁷ *Kinsley Mercury*, July 10, 17, Aug. 14, 21, 1886; *Kinsley Graphic*, July 9, Aug. 13, 1886; *Wendell Champion*, July 30, 1886.

In Wayne Township the preliminary meeting at which the organization of a club was discussed was held at the Ostrander School on July 2, 1886. C. S. Ostrander for whom the school was named was a New Yorker and took an active interest in the club. H. C. Leslie (Ill., Ill.) and B. B. Baum (Mich., Mich.) presided. After a two-hour session the meeting adjourned until July 13 at the same place. On this occasion a permanent organization was effected with officers as follows: H. L. Norton (N. Y., Ill.), president; J. L. Donnell (Ohio, Ohio), vice president; Ed Smith (N. Y., Texas), treasurer; and J. M. Lewis, Jr. (Wisc., D. C.), secretary. A committee was appointed to draft a constitution and bylaws and report to the third meeting to be held on July 20. It was agreed that the club should cooperate with the county fair association, discuss farm problems, and make the meetings social in character by holding them at the homes of the members. At that time there was no town of Lewis to speak of, where farmers could loaf on Saturdays after doing their weekly trading, and which could compete with the meetings of the club and the big picnic dinners which always lasted until well into the afternoon. In fact, the dinners were such an effective inducement to loyal attendance that comments appeared in the newspapers suggesting that many were more interested in the food than in the discussions of good farming which made possible the well-filled tables.

The Norton ranch, where the first regular meeting was held on August 7, had been acquired recently by the Inter-State Galloway Cattle Company with H. L. Norton retained as manager. The ranch buildings were surrounded by a "magnificent grove" of trees, set out seven years before, and under these trees four tables were spread, all well laden with food. The barn was arranged with seats and tables for the formal part of the meeting at 3 o'clock. The reporter for the meeting evidently felt that the occasion required special literary effort as he described the scene as follows:

It [the grove] gives one what we imagine to be the sensation experienced upon sudden transition from a desert waste into the aromatic bowers of the mythical gods. We found in this arcadian retreat at Mr. Norton's an assemblage of about one hundred and fifty persons, comprising the youth, beauty, and intelligence of

Wayne township. Some were seated at the tables doing justice to the choice provisions made for the inner man, some were strolling beneath the wide spreading branches of the friendly shade trees, reveling among handsomely arranged flower gardens, listening to the heaven-born music of nature's plumaged songsters, as they flitted through the ambrosial bowers.

The entertainment included a reading of Bret Harte's poem, *Old John Burns of Gettysburg*, by Colonel Lewis, and piano and violin music by friends from Kinsley. At the business meeting the constitution and bylaws were adopted, the preamble being as follows:

Whereas it has been found convenient and advantageous through all time and by all people to associate themselves together for mutual improvement and protection, therefore we, the citizens of Wayne township, Edwards county, do hereby form this society for the following reasons: 1st. That we may promote a more thoroughly social feeling among the people of that township. 2nd. That by associating ourselves together, we may obtain a more thorough knowledge of farming, with its coördinate branches—cattle and dairying—that by an interchange of thought and sentiment each one may become possessed of a knowledge of them all. 3rd. To the end that all bickering and strife shall cease, and that the people of this township, mutually dependent, shall be a mutual help to each other.

To accomplish the third object the club set up a committee to arbitrate disputes among members. Its personnel consisted of M. C. Kennedy (Ia., Mo.), Andrew Hardy (N. Y., N. Y.), and Mac Lewis (Wisc., D. C.). Unfortunately, no record of the proceedings of this committee has been found.

At this meeting the club decided to purchase two tents, as the residences and barns of the members were not large enough to accommodate the meetings, and members other than Norton did not possess a "magnificent grove" which would afford shelter. At this meeting and at each of those succeeding, a viewing committee made a report on the host's farm, and on occasion made recommendations for improvements. It was customary to consider a single topic and to have two or more farmers prepared to lead the discussion. During the winter months the club met at the newly-established town of Lewis.

Of the twelve men having an official part in the organization of the club, all but three must be classed as Easterners. All except three were also either ranchers or large farmers. They were well past the age when men's minds are usually thought of as

being flexible and receptive to new ideas. They had come into the country during the most favorable weather conditions of thirty years. The weather cycle had already turned by 1886, and except for the years 1891-93 when rainfall was moderate, western Kansas was entering a decade of drouth and high temperatures. The adaptability of the Easterners to the plains was being put to the supreme test.

So far as records are available, the topics of the discussions held by the club from 1886 to 1893 are as follows:

| | | |
|------|-----------|--|
| 1886 | August | Wheat raising |
| | September | Swine |
| | October | Winter feeding, care and management of livestock |
| | November | Corn stalk wheat (informal) |
| 1887 | March | Corn |
| | April | Best crop for early feeding of swine and cattle |
| | May | Horticulture |
| | July 4 | Livestock and field crops |
| | August | Curing fodder crops |
| | September | Coöperative creamery committee |
| | October | Coöperation of farmers in the manipulation of their products |
| | November | Continuation of the above |
| 1888 | May | Creamery committee report |
| | | Chinch bugs and the corn crop |
| | June | Poor corn stand (informal) |
| | July | How to make the farm profitable (farm planning; field crops and/or stock) |
| | August | Chinch bugs, corn and wheat |
| | September | Crop reports from the County |
| | | Cheese factory question |
| | October | Cheese factory question continued |
| 1889 | May | Cultivation of broom corn |
| | June | Silos and ensilage |
| | July | Silos and ensilage |
| | September | Butter and Cheese |
| 1890 | June | Future policy: questions of the day to be discussed as well as farm problems |
| 1891 | August | Wheat culture |
| | September | Wheat culture |
| | October | Butter and bread making (women) |
| 1893 | September | Wheat culture |

During the early years of the club, reports of its meetings usually appeared in the Kinsley newspapers, the *Graphic* and the *Mercury*. Although some sessions were not reported at all, others were covered sufficiently to convey the principal point involved, and a number were reported quite fully. There are no reports on the discussions of swine, horticulture, broom corn, butter and cheese, and bread and butter making (the reporter's attention being too fully occupied with the samples). Broadly speaking, the subject matter of these discussions can be grouped under five heads: adaptability of crops, field-crop culture, care of livestock, farm planning, and marketing.

On moving into the plains country it was natural for farmers to plant the crops that they had raised in their former home, such as corn, oats, soft wheat, barley, and rye. The emphasis in the grain division was on corn and oats, as is shown clearly by the Census of 1885, while in forage crops millet took precedence over sorghum. In view of the dominance of corn over wheat it may appear singular that wheat was selected for discussion at the first regular meeting in August 1886. This choice was not unnatural, however, because in the fall season wheat was the principal, if not the only crop to be sown.

The question of the choice of varieties of wheat for planting was presented by B. B. Baum (Mich.). He mentioned the Red or Early May, Kentucky Swamp, and Turkey wheat varieties, but recommended the Red May. This variety of soft winter wheat not only grew splendidly in Edwards County, he said, but the millers liked it and paid good prices, and it was always considered "prime" in the Kansas City market. The Kentucky Swamp wheat had been grown in Hodgman County, northwest of Kinsley, and the Kinsley miller spoke favorably of it. Some farmers favored Turkey, a hard winter wheat, and Baum reported that "The Turkey is a passably good wheat to yield, but the millers do not like it very well, and shippers will not buy it unless they can get it in car load lots."

The next four years of drouth, hot summers, wind, and cold winters contributed a full quota of experience. By 1891 the local press indicated a shift from Red May to Turkey wheat and

in the two meetings of the Wayne Township club in August and September 1891 the majority opinion favored Turkey. The reasons assigned were that it was hardier, stood winter and drouth better, yielded well, and in the current crop year excelled in both quality and price. So far as the question of variety was concerned, the Wayne Township farmers had reached a lasting decision as the subsequent fame of Kansas wheat was based on the improved strains of this general variety.

Corn, the basic crop of the region, was discussed fully at the March meeting of 1887, but the question of varieties received little comment. The consensus of opinion favored medium yellow corn, although a variety called Golden Beauty was highly recommended. One member had raised white corn successfully. During the following years, no variety was found which was so outstandingly superior to the others as was Turkey wheat to its rivals. The corn tradition persisted in spite of the relative failure of its adaptation to the plains.

Unfortunately there was no discussion of the relative merits of millet and sorghum, but millet quickly dropped into the background. Sorghum served a triple purpose in the farm economy: syrup-sugar, fodder, and seed. There was at least one small sorghum mill operating in the Township, in addition to the relatively large syrup factory at Kinsley. The variety grown was not recorded, but a few years of experience had taught the settlers that sorghum was one crop that never failed,—that is, almost never. Thus they had found another certainty in crop selection. Closely associated with sorghum was the introduction of other members of the sorghum group. Jerusalem corn did not establish itself. Broom corn was raised in small quantities in the County but comparatively little interest was taken in it by farmers on the sandy soil of Wayne Township. Kaffir corn was not discussed by the club, but the local press indicated that it was introduced permanently in the County about 1889, and within a few years it was widely grown. It was not included in the list of crops reported by the State Board of Agriculture until 1893, when the County planted 465 acres, while in 1894 there were 1,761 acres. The discussion of early feed crops at the meeting in April

1887 added little information, except that rye, oats, sorghum, and corn were recommended by different members. The preëminence of sorghum was too definitely recognized, however, for extensive consideration of the others.

Next in importance to the choice of crops of suitable varieties was the problem of culture and tillage. Farmers from the east who had been accustomed to draining excess water from their fields had to learn how to conserve moisture which at best was deficient in quantity and how to prevent the dry soil from blowing away. The first settlers plowed for corn and wheat with a moldboard plow, turning the stubble under as far as possible in order to provide a garden-like seed bed. The wind blew the soil away or the sand cut the tender leaves to shreds, and the smooth fields did not hold the moisture effectively for the young corn. Furthermore the plow was a slow tool with which to prepare fields when moisture was at a premium. The lister, throwing up high ridges crosswise to the prevailing south winds, prevented the soil from blowing and protected the tender corn from excessive whipping, and planting in the bottom of the furrow gave the plants the most favorable access to moisture. Listing also made it possible to prepare ground about three times as rapidly as plowing and to plant the corn at the same time.

Eastern farmers, transplanted to the plains in the middle eighties, could not understand the value of listing, and at the meeting of March 5, 1887, the Wayne Township farmers after several years' experience were about equally divided between listermen and checkrowers. All agreed that listing was better in extremely dry seasons and on sandy soils, but all agreed also that eradication of weeds was more difficult. It was claimed that checkrowing was more universally and successfully practiced, that it caused less trouble during cultivation and in corn cutting, and that it left the ground in better condition for autumn planting. A number of farmers claimed that the quality of corn was superior when checkrowed. The reporter for the meeting commented: "The discussion was carried on with such spirit by both advocates of listing and check-rowing that one not posted would be inclined to try both."

The question of the best time to plant corn was canvassed at the same meeting, and on this matter opinion differed, ranging from April 20 to May 20. All agreed that corn should be cultivated three or four times. The screw harrow was recommended for small corn and especially for listed corn. The problem of weed eradication was only partially met by the knife sled during the nineties, and the disc sled for cultivating listed corn was not introduced until a decade later. A comparison of local experience showed that the average yield of corn was 22 bushels per acre in 1886.

Two years later, early spring rains directed attention to other aspects of the corn problem. One farmer reported at the May meeting that much of his listed corn had been drowned and would have to be replanted. He proposed to furrow one way and then plant in the furrow with a corn planter. The June meeting was largely devoted to an informal exchange of ideas on the reasons for the poor stand of corn. Several men placed the blame on the lister and some reported that they had replanted. One man said that he had listed too deep and the sand had washed over the corn and buried it. Others reported the best stand they had ever had and defended listing. The reporter of the meeting indicated that the listermen were in the majority. After a trip through the country, the editor of the *Kinsley Banner-Graphic* commented on July 6, that he was convinced that what Edwards County needed was scientific farming and a little more capital. To support his dictum he insisted that every piece of corn laid off both ways (checkrowed) and well cultivated was in excellent condition.

The chinch bugs, a frequent pest, were a serious problem in 1888 as they threatened the corn crop. They were discussed in the May meeting, but the opinion was expressed that the rains had disposed of them for the season. The reports of the August meeting indicated otherwise, however, as the bugs and the drouth had damaged the corn seriously. The highest estimate of yield reported was 40 bushels, the average was set at 20, but it was admitted that some corn was "very poor." G. H. Gilson (N. Y., Ky.) had burned off the prairie on his place in the spring, but this

had not destroyed the bugs. Some farmers believed that burning did more damage than the bugs. The blame for chinch bug infestation was quite generally charged to wheat, and the secretary reported: "This led to a discussion as to whether it is best to sow wheat or not. The farmers were divided in opinion. A number of them will sow wheat, while a few will not, for fear of chinch bugs." Nothing can emphasize more emphatically the prevailing devotion to corn than that such a drastic proposal should have been made at all, and it must be understood that it was made in all seriousness in a county in the heart of what was to become the southwestern hard winter wheat area, whose proud boast is that "Kansas raises the best wheat in the World."

At the September meeting visitors from other townships were called upon for information. From Lincoln Township, in the southeast corner of the County, the corn crop was reported as the best ever raised. Corn was the principal crop, and was raised on light sandy soil. The visitor from Kinsley Township, north of the River, reported that corn was a failure on the heavy land outside of the bottoms and that he did not attempt to raise it at all. These reports are indicative of the lesson experience was teaching Wayne Township farmers. Corn was more successful on the sandy soil, because the sand withstood drouth better than hard land. The presence of sandy soil was an important reason why corn persisted as a basic crop in Wayne Township long after it had been abandoned on the high, hard uplands north of the River.

At the wheat meeting in August 1886, G. D. Misner (Ohio, Ill.) led the discussion on the preparation of fields for wheat and seeding methods. He recommended June-July plowing to conserve moisture and early planting. On fallow ground he favored drilling, but with corn he broadcast the seed. G. H. Gilson agreed to early plowing and emphasized that late plowing in dry seasons meant total failure. In ordinary seasons he thought early plowing would yield a third better crop. He also stressed deep plowing. He sowed from $1\frac{1}{2}$ to $1\frac{1}{4}$ bushels of seed per acre. He disagreed with Misner on the method of sowing in corn and recommended the one-horse drill. Volunteer wheat, he insisted,

never amounted to anything. On most of the points enumerated, time has demonstrated that their opinions were well considered. The overwhelming difficulty in putting the early plowing theory into practice was that moisture seldom lasted long enough into midsummer to allow sufficient time to work the ground with the inadequate horse power and moldboard plows of the average small farmer.

The weather hazard frequently proved disastrous even after the wheat was sown under favorable conditions. The problem of winter killing is vividly illustrated by the note of the census enumerator of Wayne Township in March 1885, which reads: "Out of 471 acres of fall wheat there is not wheat enough to cover 15 acres. All winter killed." Part of the difficulty lay in the variety of soft wheat planted, and part in the handling of the soil. These it was possible to remedy, but disease, drouth, and unseasonable cold weather were beyond the reach of man to offset completely.

Wheat was also discussed at the two meetings in August and September 1891. Relatively good yields in 1889, 1890, and 1891 and fair prices gave it preference in depression farm planning. The acreage in wheat had increased phenomenally in 1890 and 1891 and the crop was discussed with interest. Emphasis was again placed on plowing immediately after harvest, and on pulverizing the ground a second time with either a disc or screw harrow before sowing. Clean corn ground without any preparation was also recommended. The best time to sow wheat was fixed at September 20 or later. No remedy was yet advanced, however, to overcome the inadequacy of equipment and horses. Although the disc plow which came into use near the end of the nineties did not increase the speed of plowing, it had two advantages over the moldboard plow. It left the stubble on top, which prevented blowing, and enabled the farmer to plow the ground long after it had become too dry and hard to plow with a moldboard plow. The practice of listing for wheat immediately after harvest and cutting down (busting) the ridges shortly before planting, thus working the ground twice and quickly between harvest time and planting,—the first step toward speeding up

operations,—was not taken until 1905. The second important step was the introduction of the tractor as a substitute for horse power, mostly after the World War. The tractor might be used with either the lister or the one-way, a development of the disc plow.

The sessions on the care and feeding of livestock were not so adequately reported in the press as those on corn and wheat. It may have been accidental or the result of a lack of interest, but judging from the number of times these topics were selected it scarcely seems plausible that the latter could be the case. The second regular meeting was devoted to swine, and the papers merely reported that a dozen or more farmers participated in the discussion and that hogs were held in considerable numbers by the club members. The third meeting was devoted to the winter care and management of livestock and was led by E. F. Brown who stressed shelter and feed as the prime requisites.⁸ During the preceding winter he had carried sixty head of cattle on shocked fodder, corn, and sorghum during the early part of the season, and finished with stacked feed and grain. The sorghum had been sown thickly by broadcasting in order to insure small stalks. The next speaker, B. Craft (N. Y., Iowa), insisted that the best feed should be used first, and the season finished on what might be left. H. L. Norton, manager of the Inter-State ranch, reported that his mainstay was buffalo-grass pasture, with fodder, grain, and shelter in severe weather. He insisted that shelter was more important than feed.

The discussion of silos and ensilage which was continued through two monthly sessions, June and August 1889, was not reported, and the only comment recorded was that the formal paper received attention and that several men indicated their intention to build silos. So far as the writer has discovered none were built in this period. The October meeting was devoted to a debate on butter and cheese. The former was defended by W. C. Johnson (N. Y., N. Y.) and Robert Corner (Ohio, Mo.), while

⁸ The identification of Brown is not positive, but probably there is a mistake in the initials and that E. H. Brown, a rancher, 55 years old, is meant. He was born in New York and came from that State.

cheese was championed by B. B. Baum (Mich., Mich) and James Gray (Pa., Pa.), but the result was not reported.

Some aspects of the problems of farm planning and management have of necessity been included in the topics already treated. The first meeting in which farm planning received direct discussion was on July 4, 1887 when the speaker of the day, J. M. Lewis, Sr., referred to the fact that the cattlemen who first occupied the country had held that field crops would not grow and had used the argument as a means of discouraging farmers from settling there. He admitted that he had accepted this view during his first two or three years in the country, but he was now convinced that Edwards County was destined to become a great cattle-feeding center, because it produced feed and was half way between the regions of growth and consumption of beef.

A year later the question of "How to make the farm profitable" brought out the most direct comments on the farm program. Three of the seven men mentioned by name—Gray (Pa., Pa.), Jared Malin (Ill., Ill.), and L. White (England)—defended corn as the principal farm crop. Gray who was one of the oldest settlers in the Township, both in age (64) and residence (since 1877), maintained that, except for the last year, they had raised good crops for four or five years. Lewis and White insisted that the farmer should feed his corn crop to cattle, while Gray argued especially for hogs. This argument in reality placed Lewis with the corn men. Norton and Roberts, both livestock men, spoke for sorghum as a crop that never failed, the former emphasizing the seed crop as well as the fodder value. Only one of the group, G. H. Gilson, defended wheat, and Norton condemned it on account of chinch bugs. In defending wheat Gilson mentioned that he had raised 3,600 bushels one year and sold it for eighty cents to one dollar per bushel, but in spite of this success he insisted that farmers must not depend upon any one crop. Even though these farmers were discussing money crops almost exclusively, the fact is inescapable that they were living a relatively self-sufficient existence. Most of them kept cows, hogs enough for family meat and lard, chickens, gardens, and fruit trees. Watermelons were in a class by themselves. In a country where

fruit growing was none too successful, and sweets and other delicacies expensive and unobtainable, the watermelon held a place with which no other product could compete.

Marketing problems appear in the record of the club, but they are less conspicuous than production problems. The meeting of August 1887 appointed a committee of five to investigate the sentiment of the farmers regarding the establishment of a co-operative creamery, and probably this move determined the choice of "Cooperation of farmers in the manipulation of their products" as the subject for the October meeting. There is no report of the discussion, except the comment that it was thorough and that it was continued to the November meeting. The creamery committee, reporting in May 1888, estimated the cost of a plant at \$1,000 to \$1,500, and recommended delay on the project until after harvest. The crop failure due to chinch bugs and drouth absorbed attention so completely during the following weeks that nothing further was said about a creamery.

It was not in keeping with the spirit of the frontier to quit after one or even several failures, so in September a cheese factory was suggested. Kinsley was undertaking one, but because of the distance it seemed impossible to participate in the enterprise. The Lewis brothers, Jim and Mac, pledged eighty cows and others promised smaller numbers. The proposal of a man who offered to erect and operate a factory if five hundred cows were pledged was presented. The alternative was a cooperative association. The Kinsley plan was cooperative in form, the producers sharing the profits on the basis of the amount of milk furnished. A complete investigation of cheese factory management was voted, and the secretary was instructed to correspond with manufacturers and others and report at the next meeting. In October the committee reported 333 cows pledged, and the cooperative plan was apparently adopted.

During the following winter months the plant was completed in the town of Lewis and on May 7, 1889 the first milk was delivered. At this time 480 cows were pledged. The subsequent history of the cheese factory is a bit hazy. It seems to have been operated during the summer of 1889, and probably was suspended

during the winter. The *Banner-Graphic* of Kinsley on February 7, 1890 carried a notice of a meeting of the cooperative association for February 15 and announced that "the object of the meeting is to audit the books, elect officers . . . , and to come to some conclusion as to how the factory shall be run next summer." The following week the same paper announced that the meeting was postponed indefinitely. On April 12 it was held and an offer from a private business firm was accepted to receive milk at fifty-five cents per hundred pounds. There seems to have been no further activity after the summer of 1890. During the next two or three years there was a wheat boom, and farmers were accused of having sold everything that would bring cash in order to expand the wheat acreage.⁹ The Kinsley cheese factory was also closed, and when the drouth of 1893 proved disastrous to wheat, the farmers had no dairy stock to fall back on.

Marketing difficulties account partly for the perpetuation of the corn tradition. Prior to 1886 Wayne Township had no railroad outlet, except by hauling through the sand hills to Kinsley and Larned. Even after the railroad reached the south side of the River, the sandy roads discouraged long hauls. Often grain could be marketed to better advantage in the form of livestock, and the cattle ranches afforded a close market for surplus corn. This outlet placed a premium on corn rather than wheat until the cattle cycle had passed again and the farmer had learned more fully the wheat technique.

By January 1890 the Farmers' Alliance reached Edwards County, although as much as three years earlier Union Labor and People's Party tickets had disturbed the serenity of the selfish domination of the county-seat ring. As Wayne Township became stirred by political agitation discussion of the improvement of agriculture ceased, and the farmers' club was not continued after 1893. During that summer, the farmers preferred baseball games to discussions of farm problems. The report of the September meeting on "Wheat Culture" bears the mark of a sense of futility in the succinct summary: "general opinion seemed to be that wheat should not be sown until after a rain."

⁹ Kinsley *Banner-Graphic*, Feb. 8, 1895.

Several important points not covered by the reports may be rounded out from the census data for 1895 and 1905. Of the 61 farm operators in Wayne Township in 1885 only 28 remained in 1895 and 14 in 1905.¹⁰ There were 47 operators in 1885 in Wayne Township as reduced in size, 42 in 1895, and 72 in 1905. Stated in terms of new settlers: in 1895, 14 operators were new after 1885, and 58 in 1905. The newcomers found it necessary to learn the plains agriculture, but they had the advantage of the experience already gained. The operators of 1895 were born mostly in Ohio, New York, Illinois, Missouri, and Kentucky, and came to Kansas mostly from Ohio, Illinois, Missouri, and New York. In the next ten years Illinois and Missouri supplied many more immigrants than the States farther east.

The size of farms changed relatively little in the decade ending in 1895. The ranches were gone, although there were several nearby. There were 6 large farms (400 acres and up), 8 medium-sized farms (320 acres), and 25 quarter-section farms. The next ten years rectified somewhat the inadequate size of the farm unit, the distribution being 21 large, 28 medium-sized, and 23 small farms. It is clear from the history of agriculture in this region that inadequate capital resulting in small, badly equipped farms was almost as serious an obstacle to successful occupancy of the plains as the difficulties of adaptation. Although the farmers of Wayne Township must have talked of these matters among themselves, they did not list them among the subjects set for formal discussion. The Populist agitation placed the blame for hard times on money, the tariff, the trusts, and the railroads, but after the opening of the twentieth century when the country was prosperous, a half-section was considered as small a farm as could be expected to provide a living for a farm family.

The shift in the field-crop program is probably illustrated more accurately from the census data covering the County as a whole

¹⁰ The township was divided about 1890, the west half retaining the original name and the east half taking the name of Belpre. The figures just given include the whole area. For the reduced Wayne Township the 1885 figure was 47 or near that, and for the later decades 19 and 14. No one in Belpre Township remained in 1905. Descendants are counted here as representing the 1885 operator.

than from the smaller township unit. The average acreage per farm of corn, oats, and wheat in Edwards County was as follows:

| Year | Corn | Oats | Wheat |
|------|------|------|-------|
| 1885 | 16.5 | 7.2 | 4.0 |
| 1895 | 40.6 | 16.4 | 97.8 |
| 1905 | 45.2 | 5.5 | 145.0 |

The figures show that corn held its own in actual acreage between 1895 and 1905, but that wheat increased so rapidly after 1890 that corn played a relatively small part in farm planning.

The rivalry between field crops and livestock, farming versus ranching, is not clearly delineated in the discussions of the Wayne Township Club, but the subject can be clarified from other sources. In the earlier years as settlers moved into the plains, the predominance of one over the other ran in cycles with the weather, and during the last half of the nineties cattle were increasingly favored. A resident traveling across southeastern Edwards County, northeastern Kiowa County, and northwestern Pratt County in 1895 reported that this region was practically deserted, and that some other areas were sparsely occupied. Cattlemen proposed the repeal of the herd law to the county commissioners, but the farmers protested and with such vehemence that the matter was dropped. Later some of the large cattle companies secured control of extensive holdings, fenced their pastures, and deprived the small farmers with livestock of free pasturage on vacant land. The most significant conclusion to be drawn from this farmer-rancher rivalry is the fact that the farmers were able to hold their own. The "sod buster" had learned sufficiently how to adapt himself to the plains to enable him to stay and to maintain control.

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NEWS NOTES AND COMMENTS

AGRICULTURAL MUSEUMS

"References on Agricultural Museums," compiled by Everett E. Edwards, has been issued as U. S. Department of Agriculture Library *Bibliographical Contributions* 29, 43 p. (August 1936). Copies may be obtained from the compiler.

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